

# SEQUENCE LISTING

<110> Pan, Yang  
Lora, Jose M.

<120> NOVEL INTEGRIN ALPHA SUBUNIT AND USES THEREOF

<130> MBIO1999-017CP1B(M) (formerly 07334-275001)

<140> US 09/561,263

<141> 2000-04-27

<150> US 09/322,790

<151> 1999-05-28

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<212> DNA

<213> Homo sapiens

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Asn Leu Trp Leu Arg Ser Leu Lys Ala Leu Lys Tyr Lys Ser Met Lys	

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Pro	Trp	Val	Glu	Val	Gln	His	Phe	Leu	Ile	Asn	Ile	Leu	Lys	Lys	Phe	
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Ala	Ser	Asp	Pro	Asp	Asp	Lys	His	Phe	Phe	Asn	Val	Thr	Asp	Glu	Ala					
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gcc	ttg	aag	gac	att	gtc	gat	gcc	ctg	ggg	gac	aga	atc	ttc	agc	ctg	1056				
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gaa	ggc	acc	aac	aag	aac	gag	acc	tcc	ttt	ggg	ctg	gag	atg	tca	cag	1104				
Glu	Gly	Thr	Asn	Lys	Asn	Glu	Thr	Ser	Phe	Gly	Leu	Glu	Met	Ser	Gln					
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Thr	Gly	Phe	Ser	Ser	His	Val	Val	Glu	Asp	Gly	Val	Leu	Leu	Gly	Ala					
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gtc	ggt	gcc	tat	gac	tgg	aat	gga	gct	gtg	cta	aag	gag	acg	agt	gcc	1200				
Val	Gly	Ala	Tyr	Asp	Trp	Asn	Gly	Ala	Val	Leu	Lys	Glu	Thr	Ser	Ala					
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ggg	aag	gtc	att	cct	ctc	cgc	gag	tcc	tac	ctg	aaa	gag	ttc	ccc	gag	1248				
Gly	Lys	Val	Ile	Pro	Leu	Arg	Glu	Ser	Tyr	Leu	Lys	Glu	Phe	Pro	Glu					
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gag	ctc	aag	aac	cat	ggt	gca	tac	ctg	ggg	tac	aca	gtc	aca	tcg	gtc	1296				
Glu	Leu	Lys	Asn	His	Gly	Ala	Tyr	Leu	Gly	Tyr	Thr	Val	Thr	Ser	Val					
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gtg	tcc	tcc	agg	cag	ggg	cga	gtg	tac	gtg	gcc	gga	gcc	ccc	cgg	ttc	1344				
Val	Ser	Ser	Arg	Gln	Gly	Arg	Val	Tyr	Val	Ala	Gly	Ala	Pro	Arg	Phe					
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aac	cac	acg	ggc	aag	gtc	atc	ctg	ttc	acc	atg	cac	aac	aac	cgg	agc	1392				
Asn	His	Thr	Gly	Lys	Val	Ile	Leu	Phe	Thr	Met	His	Asn	Asn	Arg	Ser					
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ctc	acc	atc	cac	cag	gct	atg	cgg	ggc	cag	cag	ata	ggc	tct	tac	ttt	1440				
Leu	Thr	Ile	His	Gln	Ala	Met	Arg	Gly	Gln	Gln	Ile	Gly	Ser	Tyr	Phe					
465					470						475			480						
ggg	agt	gaa	atc	acc	tcg	gtg	gac	atc	gac	ggc	gac	ggc	gtg	act	gat	1488				
Gly	Ser	Glu	Ile	Thr	Ser	Val	Asp	Ile	Asp	Gly	Asp	Gly	Val	Thr	Asp					
			485						490						495					



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tcc att gcc tca gtt cga gac ctc aac cag gat tcc tac aat gac gtg Ser Ile Ala Ser Val Arg Asp Leu Asn Gln Asp Ser Tyr Asn Asp Val 545 550 555 560	1680
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aca gcc tca gag ctg gct acc ggc ctc cag tat ttt ggc tgc agc atc Thr Ala Ser Glu Leu Ala Thr Gly Leu Gln Tyr Phe Gly Cys Ser Ile 595 600 605	1824
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gga gcc ctt ggc aac gct gtg att ctg tgg tcc cgc cca gtg gtt cag Gly Ala Leu Gly Asn Ala Val Ile Leu Trp Ser Arg Pro Val Val Gln 625 630 635 640	1920
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aga gac tgc aag cgc agt ggc agg gat gcc acc tgc ctg gcc gcc ttc Arg Asp Cys Lys Arg Ser Gly Arg Asp Ala Thr Cys Leu Ala Ala Phe 660 665 670	2016
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gtt ggc atc aga tac aac gcc acc atg gat gag agg cgg tat aca ccg Val Gly Ile Arg Tyr Asn Ala Thr Met Asp Glu Arg Arg Tyr Thr Pro 690 695 700	2112
agg gcc cac ctg gac gag ggc ggg gac cga ttc acc aac aga gcc gta Arg Ala His Leu Asp Glu Gly Gly Asp Arg Phe Thr Asn Arg Ala Val 705 710 715 720	2160
ctg ctc tcc tcc ggc cag gag ctc tgt gag cgg atc aac ttc cat gtc Leu Leu Ser Ser Gly Gln Glu Leu Cys Glu Arg Ile Asn Phe His Val 725 730 735	2208

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Leu Asp Thr Ala Asp Tyr Val Lys Pro Val Thr Phe Ser Val Glu Tyr	
740 745 750	
tcc ctg gag gac cct gac cat ggc ccc atg ctg gac gac ggc tgg ccc	2304
Ser Leu Glu Asp Pro Asp His Gly Pro Met Leu Asp Asp Gly Trp Pro	
755 760 765	
acc act ctc aga gtc tcg gtg ccc ttc tgg aac ggc tgc aat gag gat	2352
Thr Thr Leu Arg Val Ser Val Pro Phe Trp Asn Gly Cys Asn Glu Asp	
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gag cac tgt gtc cct gac ctt gtg ttg gat gcc cgg agt gac ctg ccc	2400
Glu His Cys Val Pro Asp Leu Val Leu Asp Ala Arg Ser Asp Leu Pro	
785 790 795 800	
acg gcc atg gag tac tgc cag agg gtg ctg agg aag cct gcg cag gac	2448
Thr Ala Met Glu Tyr Cys Gln Arg Val Leu Arg Lys Pro Ala Gln Asp	
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Cys Ser Ala Tyr Thr Leu Ser Phe Asp Thr Thr Val Phe Ile Ile Glu	
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Ser Thr Arg Gln Arg Val Ala Val Glu Ala Thr Leu Glu Asn Arg Gly	
835 840 845	
gag aac gcc tac agc acg gtc cta aat atc tcg cag tca gca aac ctg	2592
Glu Asn Ala Tyr Ser Thr Val Leu Asn Ile Ser Gln Ser Ala Asn Leu	
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Gln Phe Ala Ser Leu Ile Gln Lys Glu Asp Ser Asp Gly Ser Ile Glu	
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Cys Val Asn Glu Glu Arg Arg Leu Gln Lys Gln Val Cys Asn Val Ser	
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Tyr Pro Phe Phe Arg Ala Lys Ala Lys Val Ala Phe Arg Leu Asp Phe	
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Glu Phe Ser Lys Ser Ile Phe Leu His His Leu Glu Ile Glu Leu Ala	
915 920 925	
gca ggc agt gac agt aat gag cgg gac agc acc aag gaa gac aac gtg	2832
Ala Gly Ser Asp Ser Asn Glu Arg Asp Ser Thr Lys Glu Asp Asn Val	
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gcc ccc tta cgc ttc cac ctc aaa tac gag gct gac gtc ctc ttc acc	2880
Ala Pro Leu Arg Phe His Leu Lys Tyr Glu Ala Asp Val Leu Phe Thr	
945 950 955 960	
agg agc agc agc ctg agc cac tac gag gtc aag ccc aac agc tcg ctg	2928
Arg Ser Ser Ser Leu Ser His Tyr Glu Val Lys Pro Asn Ser Ser Leu	
965 970 975	
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Glu Arg Tyr Asp Gly Ile Gly Pro Pro Phe Ser Cys Ile Phe Arg Ile	
980 985 990	
cag aac ttg ggc ttg ttc ccc atc cac ggg atg atg atg aag atc acc	3024
Gln Asn Leu Gly Leu Phe Pro Ile His Gly Met Met Met Lys Ile Thr	
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Ile Pro Ile Ala Thr Arg Ser Gly Asn Arg Leu Leu Lys Leu Arg Asp	
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Phe Leu Thr Asp Glu Ala Asn Thr Ser Cys Asn Ile Trp Gly Asn Ser	
1025 1030 1035 1040	
act gag tac cgg ccc acc cca gtg gag gaa gac ttg cgt cgt gct cca	3168
Thr Glu Tyr Arg Pro Thr Pro Val Glu Glu Asp Leu Arg Arg Ala Pro	
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Gln Leu Asn His Ser Asn Ser Asp Val Val Ser Ile Asn Cys Asn Ile	
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cgg ctg gtc ccc aac cag gaa atc aat ttc cat cta ctg ggg aac ctg	3264
Arg Leu Val Pro Asn Gln Glu Ile Asn Phe His Leu Leu Gly Asn Leu	
1075 1080 1085	
tgg ttg agg tcc cta aaa gca ctc aag tac aaa tcc atg aaa atc atg	3312
Trp Leu Arg Ser Leu Lys Ala Leu Lys Tyr Lys Ser Met Lys Ile Met	
1090 1095 1100	
gtc aac gca gcc ttg cag agg cag ttc cac agc ccc ttc atc ttc cgt	3360
Val Asn Ala Ala Leu Gln Arg Gln Phe His Ser Pro Phe Ile Phe Arg	
1105 1110 1115 1120	
gag gag gat ccc agc cgc cag atc gtg ttt gag atc tcc aag caa gag	3408
Glu Glu Asp Pro Ser Arg Gln Ile Val Phe Glu Ile Ser Lys Gln Glu	
1125 1130 1135	
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Asp Trp Gln Val Pro Ile Trp Ile Ile Val Gly Ser Thr Leu Gly Gly	
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Leu Leu Leu Leu Ala Leu Leu Val Leu Ala Leu Trp Lys Leu Gly Phe	
1155 1160 1165	
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Phe Arg Ser Ala Arg Arg Arg Arg Glu Pro Gly Leu Asp Pro Thr Pro	
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	-5					1				5					10
Ile	Pro	Gly	Ser	Arg	Thr	Ala	Phe	Phe	Gly	Tyr	Thr	Val	Gln	Gln	His
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Asp	Ile	Ser	Gly	Asn	Lys	Trp	Leu	Val	Val	Gly	Ala	Pro	Leu	Glu	Thr
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Asn	Gly	Tyr	Gln	Lys	Thr	Gly	Asp	Val	Tyr	Lys	Cys	Pro	Val	Ile	His
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Gly	Asn	Cys	Thr	Lys	Leu	Asn	Leu	Gly	Arg	Val	Thr	Leu	Ser	Asn	Val
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Ser	Glu	Arg	Lys	Asp	Asn	Met	Arg	Leu	Gly	Leu	Ser	Leu	Ala	Thr	Asn
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Pro	Lys	Asp	Asn	Ser	Phe	Leu	Ala	Cys	Ser	Pro	Leu	Trp	Ser	His	Glu
				95					100					105	
Cys	Gly	Ser	Ser	Tyr	Tyr	Thr	Thr	Gly	Met	Cys	Ser	Arg	Val	Asn	Ser
			110					115					120		
Asn	Phe	Arg	Phe	Ser	Lys	Thr	Val	Ala	Pro	Ala	Leu	Gln	Arg	Cys	Gln
		125					130					135			
Thr	Tyr	Met	Asp	Ile	Val	Ile	Val	Leu	Asp	Gly	Ser	Asn	Ser	Ile	Tyr
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Pro	Trp	Val	Glu	Val	Gln	His	Phe	Leu	Ile	Asn	Ile	Leu	Lys	Lys	Phe
	155				160					165					170
Tyr	Ile	Gly	Pro	Gly	Gln	Ile	Gln	Val	Gly	Val	Val	Gln	Tyr	Gly	Glu
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Asp	Val	Val	His	Glu	Phe	His	Leu	Asn	Asp	Tyr	Arg	Ser	Val	Lys	Asp
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Val	Val	Glu	Ala	Ala	Ser	His	Ile	Glu	Gln	Arg	Gly	Gly	Thr	Glu	Thr
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Arg	Thr	Ala	Phe	Gly	Ile	Glu	Phe	Ala	Arg	Ser	Glu	Ala	Phe	Gln	Lys
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Gly	Gly	Arg	Lys	Gly	Ala	Lys	Lys	Val	Met	Ile	Val	Ile	Thr	Asp	Gly
	235				240					245					250
Glu	Ser	His	Asp	Ser	Pro	Asp	Leu	Glu	Lys	Val	Ile	Gln	Gln	Ser	Glu
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Arg	Asp	Asn	Val	Thr	Arg	Tyr	Ala	Val	Ala	Val	Leu	Gly	Tyr	Tyr	Asn
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Arg	Arg	Gly	Ile	Asn	Pro	Glu	Thr	Phe	Leu	Asn	Glu	Ile	Lys	Tyr	Ile
		285					290					295			
Ala	Ser	Asp	Pro	Asp	Asp	Lys	His	Phe	Phe	Asn	Val	Thr	Asp	Glu	Ala
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Ala	Leu	Lys	Asp	Ile	Val	Asp	Ala	Leu	Gly	Asp	Arg	Ile	Phe	Ser	Leu
	315				320					325					330
Glu	Gly	Thr	Asn	Lys	Asn	Glu	Thr	Ser	Phe	Gly	Leu	Glu	Met	Ser	Gln
				335					340					345	
Thr	Gly	Phe	Ser	Ser	His	Val	Val	Glu	Asp	Gly	Val	Leu	Leu	Gly	Ala
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Val	Gly	Ala	Tyr	Asp	Trp	Asn	Gly	Ala	Val	Leu	Lys	Glu	Thr	Ser	Ala
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Gly	Lys	Val	Ile	Pro	Leu	Arg	Glu	Ser	Tyr	Leu	Lys	Glu	Phe	Pro	Glu
	380					385					390				
Glu	Leu	Lys	Asn	His	Gly	Ala	Tyr	Leu	Gly	Tyr	Thr	Val	Thr	Ser	Val
	395				400					405					410
Val	Ser	Ser	Arg	Gln	Gly	Arg	Val	Tyr	Val	Ala	Gly	Ala	Pro	Arg	Phe
				415					420					425	
Asn	His	Thr	Gly	Lys	Val	Ile	Leu	Phe	Thr	Met	His	Asn	Asn	Arg	Ser



Ala Pro Leu Arg Phe His Leu Lys Tyr Glu Ala Asp Val Leu Phe Thr  
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 Arg Ser Ser Ser Leu Ser His Tyr Glu Val Lys Pro Asn Ser Ser Leu  
       940                          945                          950  
 Glu Arg Tyr Asp Gly Ile Gly Pro Pro Phe Ser Cys Ile Phe Arg Ile  
 955                          960                          965                          970  
 Gln Asn Leu Gly Leu Phe Pro Ile His Gly Met Met Met Lys Ile Thr  
                           975                          980                          985  
 Ile Pro Ile Ala Thr Arg Ser Gly Asn Arg Leu Leu Lys Leu Arg Asp  
                           990                          995                          1000  
 Phe Leu Thr Asp Glu Ala Asn Thr Ser Cys Asn Ile Trp Gly Asn Ser  
       1005                          1010                          1015  
 Thr Glu Tyr Arg Pro Thr Pro Val Glu Glu Asp Leu Arg Arg Ala Pro  
 1020                          1025                          1030  
 Gln Leu Asn His Ser Asn Ser Asp Val Val Ser Ile Asn Cys Asn Ile  
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 Arg Leu Val Pro Asn Gln Glu Ile Asn Phe His Leu Leu Gly Asn Leu  
                           1055                          1060                          1065  
 Trp Leu Arg Ser Leu Lys Ala Leu Lys Tyr Lys Ser Met Lys Ile Met  
                           1070                          1075                          1080  
 Val Asn Ala Ala Leu Gln Arg Gln Phe His Ser Pro Phe Ile Phe Arg  
       1085                          1090                          1095  
 Glu Glu Asp Pro Ser Arg Gln Ile Val Phe Glu Ile Ser Lys Gln Glu  
       1100                          1105                          1110  
 Asp Trp Gln Val Pro Ile Trp Ile Ile Val Gly Ser Thr Leu Gly Gly  
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 Leu Leu Leu Leu Ala Leu Leu Val Leu Ala Leu Trp Lys Leu Gly Phe  
                           1135                          1140                          1145  
 Phe Arg Ser Ala Arg Arg Arg Arg Glu Pro Gly Leu Asp Pro Thr Pro  
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 Lys Val Leu Glu  
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                           20                          25                          30  
 Trp Leu Val Val Gly Ala Pro Leu Glu Thr Asn Gly Tyr Gln Lys Thr  
       35                          40                          45  
 Gly Asp Val Tyr Lys Cys Pro Val Ile His Gly Asn Cys Thr Lys Leu  
       50                          55                          60  
 Asn Leu Gly Arg Val Thr Leu Ser Asn Val Ser Glu Arg Lys Asp Asn  
       65                          70                          75                          80  
 Met Arg Leu Gly Leu Ser Leu Ala Thr Asn Pro Lys Asp Asn Ser Phe  
                           85                          90                          95  
 Leu Ala Cys Ser Pro Leu Trp Ser His Glu Cys Gly Ser Ser Tyr Tyr  
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 Thr Thr Gly Met Cys Ser Arg Val Asn Ser Asn Phe Arg Phe Ser Lys  
       115                          120                          125  
 Thr Val Ala Pro Ala Leu Gln Arg Cys Gln Thr Tyr Met Asp Ile Val  
       130                          135                          140  
 Ile Val Leu Asp Gly Ser Asn Ser Ile Tyr Pro Trp Val Glu Val Gln  
 145                          150                          155                          160  
 His Phe Leu Ile Asn Ile Leu Lys Lys Phe Tyr Ile Gly Pro Gly Gln  
                           165                          170                          175

Ile	Gln	Val	Gly	Val	Val	Gln	Tyr	Gly	Glu	Asp	Val	Val	His	Glu	Phe	180	185	190
His	Leu	Asn	Asp	Tyr	Arg	Ser	Val	Lys	Asp	Val	Val	Glu	Ala	Ala	Ser	195	200	205
His	Ile	Glu	Gln	Arg	Gly	Gly	Thr	Glu	Thr	Arg	Thr	Ala	Phe	Gly	Ile	210	215	220
Glu	Phe	Ala	Arg	Ser	Glu	Ala	Phe	Gln	Lys	Gly	Gly	Arg	Lys	Gly	Ala	225	230	235
Lys	Lys	Val	Met	Ile	Val	Ile	Thr	Asp	Gly	Glu	Ser	His	Asp	Ser	Pro	245	250	255
Asp	Leu	Glu	Lys	Val	Ile	Gln	Gln	Ser	Glu	Arg	Asp	Asn	Val	Thr	Arg	260	265	270
Tyr	Ala	Val	Ala	Val	Leu	Gly	Tyr	Tyr	Asn	Arg	Arg	Gly	Ile	Asn	Pro	275	280	285
Glu	Thr	Phe	Leu	Asn	Glu	Ile	Lys	Tyr	Ile	Ala	Ser	Asp	Pro	Asp	Asp	290	295	300
Lys	His	Phe	Phe	Asn	Val	Thr	Asp	Glu	Ala	Ala	Leu	Lys	Asp	Ile	Val	305	310	315
Asp	Ala	Leu	Gly	Asp	Arg	Ile	Phe	Ser	Leu	Glu	Gly	Thr	Asn	Lys	Asn	325	330	335
Glu	Thr	Ser	Phe	Gly	Leu	Glu	Met	Ser	Gln	Thr	Gly	Phe	Ser	Ser	His	340	345	350
Val	Val	Glu	Asp	Gly	Val	Leu	Leu	Gly	Ala	Val	Gly	Ala	Tyr	Asp	Trp	355	360	365
Asn	Gly	Ala	Val	Leu	Lys	Glu	Thr	Ser	Ala	Gly	Lys	Val	Ile	Pro	Leu	370	375	380
Arg	Glu	Ser	Tyr	Leu	Lys	Glu	Phe	Pro	Glu	Glu	Leu	Lys	Asn	His	Gly	385	390	395
Ala	Tyr	Leu	Gly	Tyr	Thr	Val	Thr	Ser	Val	Val	Ser	Ser	Arg	Gln	Gly	405	410	415
Arg	Val	Tyr	Val	Ala	Gly	Ala	Pro	Arg	Phe	Asn	His	Thr	Gly	Lys	Val	420	425	430
Ile	Leu	Phe	Thr	Met	His	Asn	Asn	Arg	Ser	Leu	Thr	Ile	His	Gln	Ala	435	440	445
Met	Arg	Gly	Gln	Gln	Ile	Gly	Ser	Tyr	Phe	Gly	Ser	Glu	Ile	Thr	Ser	450	455	460
Val	Asp	Ile	Asp	Gly	Asp	Gly	Val	Thr	Asp	Val	Leu	Leu	Val	Gly	Ala	465	470	475
Pro	Met	Tyr	Phe	Asn	Glu	Gly	Arg	Glu	Arg	Gly	Lys	Val	Tyr	Val	Tyr	485	490	495
Glu	Leu	Arg	Gln	Asn	Arg	Phe	Val	Tyr	Asn	Gly	Thr	Leu	Lys	Asp	Ser	500	505	510
His	Ser	Tyr	Gln	Asn	Ala	Arg	Phe	Gly	Ser	Ser	Ile	Ala	Ser	Val	Arg	515	520	525
Asp	Leu	Asn	Gln	Asp	Ser	Tyr	Asn	Asp	Val	Val	Val	Gly	Ala	Pro	Leu	530	535	540
Glu	Asp	Asn	His	Ala	Gly	Ala	Ile	Tyr	Ile	Phe	His	Gly	Phe	Arg	Gly	545	550	555
Ser	Ile	Leu	Lys	Thr	Pro	Lys	Gln	Arg	Ile	Thr	Ala	Ser	Glu	Leu	Ala	565	570	575
Thr	Gly	Leu	Gln	Tyr	Phe	Gly	Cys	Ser	Ile	His	Gly	Gln	Leu	Asp	Leu	580	585	590
Asn	Glu	Asp	Gly	Leu	Ile	Asp	Leu	Ala	Val	Gly	Ala	Leu	Gly	Asn	Ala	595	600	605
Val	Ile	Leu	Trp	Ser	Arg	Pro	Val	Val	Gln	Ile	Asn	Ala	Ser	Leu	His	610	615	620
Phe	Glu	Pro	Ser	Lys	Ile	Asn	Ile	Phe	His	Arg	Asp	Cys	Lys	Arg	Ser	625	630	635
Gly	Arg	Asp	Ala	Thr	Cys	Leu	Ala	Ala	Phe	Leu	Cys	Phe	Thr	Pro	Ile	645	650	655
Phe	Leu	Ala	Pro	His	Phe	Gln	Thr	Thr	Thr	Val	Gly	Ile	Arg	Tyr	Asn			

660					665					670						
Ala	Thr	Met	Asp	Glu	Arg	Arg	Tyr	Thr	Pro	Arg	Ala	His	Leu	Asp	Glu	
675					680					685						
Gly	Gly	Asp	Arg	Phe	Thr	Asn	Arg	Ala	Val	Leu	Leu	Ser	Ser	Gly	Gln	
690					695					700						
Glu	Leu	Cys	Glu	Arg	Ile	Asn	Phe	His	Val	Leu	Asp	Thr	Ala	Asp	Tyr	
705					710					715					720	
Val	Lys	Pro	Val	Thr	Phe	Ser	Val	Glu	Tyr	Ser	Leu	Glu	Asp	Pro	Asp	
725					730					735						
His	Gly	Pro	Met	Leu	Asp	Asp	Gly	Trp	Pro	Thr	Thr	Leu	Arg	Val	Ser	
740					745					750						
Val	Pro	Phe	Trp	Asn	Gly	Cys	Asn	Glu	Asp	Glu	His	Cys	Val	Pro	Asp	
755					760					765						
Leu	Val	Leu	Asp	Ala	Arg	Ser	Asp	Leu	Pro	Thr	Ala	Met	Glu	Tyr	Cys	
770					775					780						
Gln	Arg	Val	Leu	Arg	Lys	Pro	Ala	Gln	Asp	Cys	Ser	Ala	Tyr	Thr	Leu	
785					790					795					800	
Ser	Phe	Asp	Thr	Thr	Val	Phe	Ile	Ile	Glu	Ser	Thr	Arg	Gln	Arg	Val	
805					810					815						
Ala	Val	Glu	Ala	Thr	Leu	Glu	Asn	Arg	Gly	Glu	Asn	Ala	Tyr	Ser	Thr	
820					825					830						
Val	Leu	Asn	Ile	Ser	Gln	Ser	Ala	Asn	Leu	Gln	Phe	Ala	Ser	Leu	Ile	
835					840					845						
Gln	Lys	Glu	Asp	Ser	Asp	Gly	Ser	Ile	Glu	Cys	Val	Asn	Glu	Glu	Arg	
850					855					860						
Arg	Leu	Gln	Lys	Gln	Val	Cys	Asn	Val	Ser	Tyr	Pro	Phe	Phe	Arg	Ala	
865					870					875					880	
Lys	Ala	Lys	Val	Ala	Phe	Arg	Leu	Asp	Phe	Glu	Phe	Ser	Lys	Ser	Ile	
885					890					895						
Phe	Leu	His	His	Leu	Glu	Ile	Glu	Leu	Ala	Ala	Gly	Ser	Asp	Ser	Asn	
900					905					910						
Glu	Arg	Asp	Ser	Thr	Lys	Glu	Asp	Asn	Val	Ala	Pro	Leu	Arg	Phe	His	
915					920					925						
Leu	Lys	Tyr	Glu	Ala	Asp	Val	Leu	Phe	Thr	Arg	Ser	Ser	Ser	Leu	Ser	
930					935					940						
His	Tyr	Glu	Val	Lys	Pro	Asn	Ser	Ser	Leu	Glu	Arg	Tyr	Asp	Gly	Ile	
945					950					955					960	
Gly	Pro	Pro	Phe	Ser	Cys	Ile	Phe	Arg	Ile	Gln	Asn	Leu	Gly	Leu	Phe	
965					970					975						
Pro	Ile	His	Gly	Met	Met	Met	Lys	Ile	Thr	Ile	Pro	Ile	Ala	Thr	Arg	
980					985					990						
Ser	Gly	Asn	Arg	Leu	Leu	Lys	Leu	Arg	Asp	Phe	Leu	Thr	Asp	Glu	Ala	
995					1000					1005						
Asn	Thr	Ser	Cys	Asn	Ile	Trp	Gly	Asn	Ser	Thr	Glu	Tyr	Arg	Pro	Thr	
1010					1015					1020						
Pro	Val	Glu	Glu	Asp	Leu	Arg	Arg	Ala	Pro	Gln	Leu	Asn	His	Ser	Asn	
1025					1030					1035					1040	
Ser	Asp	Val	Val	Ser	Ile	Asn	Cys	Asn	Ile	Arg	Leu	Val	Pro	Asn	Gln	
1045					1050					1055						
Glu	Ile	Asn	Phe	His	Leu	Leu	Gly	Asn	Leu	Trp	Leu	Arg	Ser	Leu	Lys	
1060					1065					1070						
Ala	Leu	Lys	Tyr	Lys	Ser	Met	Lys	Ile	Met	Val	Asn	Ala	Ala	Leu	Gln	
1075					1080					1085						
Arg	Gln	Phe	His	Ser	Pro	Phe	Ile	Phe	Arg	Glu	Glu	Asp	Pro	Ser	Arg	
1090					1095					1100						
Gln	Ile	Val	Phe	Glu	Ile	Ser	Lys	Gln	Glu	Asp	Trp	Gln	Val	Pro	Ile	
1105					1110					1115					1120	
Trp	Ile	Ile	Val	Gly	Ser	Thr	Leu	Gly	Gly	Leu	Leu	Leu	Leu	Ala	Leu	
1125					1130					1135						
Leu	Val	Leu	Ala	Leu	Trp	Lys	Leu	Gly	Phe	Phe	Arg	Ser	Ala	Arg	Arg	
1140					1145					1150						



Arg Arg Glu Pro Gly Leu Asp Pro Thr Pro Lys Val Leu Glu  
 1155 1160 1165

<210> 5  
 <211> 22  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SIGNAL  
 <222> (1)...(22)

<400> 5

Met Asp Leu Pro Arg Gly Leu Val Val Ala Trp Ala Leu Ser Leu Trp  
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 Pro Gly Phe Thr Asp Thr  
 -5

<210> 6  
 <211> 1141  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SIGNAL  
 <222> (1)...(22)

<400> 6

Met Asp Leu Pro Arg Gly Leu Val Val Ala Trp Ala Leu Ser Leu Trp  
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 Pro Gly Phe Thr Asp Thr Phe Asn Met Asp Thr Arg Lys Pro Arg Val  
 -5 1 5 10  
 Ile Pro Gly Ser Arg Thr Ala Phe Phe Gly Tyr Thr Val Gln Gln His  
 15 20 25  
 Asp Ile Ser Gly Asn Lys Trp Leu Val Val Gly Ala Pro Leu Glu Thr  
 30 35 40  
 Asn Gly Tyr Gln Lys Thr Gly Asp Val Tyr Lys Cys Pro Val Ile His  
 45 50 55  
 Gly Asn Cys Thr Lys Leu Asn Leu Gly Arg Val Thr Leu Ser Asn Val  
 60 65 70  
 Ser Glu Arg Lys Asp Asn Met Arg Leu Gly Leu Ser Leu Ala Thr Asn  
 75 80 85 90  
 Pro Lys Asp Asn Ser Phe Leu Ala Cys Ser Pro Leu Trp Ser His Glu  
 95 100 105  
 Cys Gly Ser Ser Tyr Tyr Thr Thr Gly Met Cys Ser Arg Val Asn Ser  
 110 115 120  
 Asn Phe Arg Phe Ser Lys Thr Val Ala Pro Ala Leu Gln Arg Cys Gln  
 125 130 135  
 Thr Tyr Met Asp Ile Val Ile Val Leu Asp Gly Ser Asn Ser Ile Tyr  
 140 145 150  
 Pro Trp Val Glu Val Gln His Phe Leu Ile Asn Ile Leu Lys Lys Phe  
 155 160 165 170  
 Tyr Ile Gly Pro Gly Gln Ile Gln Val Gly Val Val Gln Tyr Gly Glu  
 175 180 185  
 Asp Val Val His Glu Phe His Leu Asn Asp Tyr Arg Ser Val Lys Asp  
 190 195 200  
 Val Val Glu Ala Ala Ser His Ile Glu Gln Arg Gly Gly Thr Glu Thr  
 205 210 215  
 Arg Thr Ala Phe Gly Ile Glu Phe Ala Arg Ser Glu Ala Phe Gln Lys  
 220 225 230  
 Gly Gly Arg Lys Gly Ala Lys Lys Val Met Ile Val Ile Thr Asp Gly

235		240		245		250
Glu Ser His Asp	Ser Pro Asp Leu Glu Lys Val Ile Gln Gln Ser Glu					
	255		260		265	
Arg Asp Asn Val Thr Arg Tyr Ala Val Ala Val Leu Gly Tyr Tyr Asn						
	270		275		280	
Arg Arg Gly Ile Asn Pro Glu Thr Phe Leu Asn Glu Ile Lys Tyr Ile						
	285		290		295	
Ala Ser Asp Pro Asp Asp Lys His Phe Phe Asn Val Thr Asp Glu Ala						
	300		305		310	
Ala Leu Lys Asp Ile Val Asp Ala Leu Gly Asp Arg Ile Phe Ser Leu						
	315		320		325	
Glu Gly Thr Asn Lys Asn Glu Thr Ser Phe Gly Leu Glu Met Ser Gln						
	335		340		345	
Thr Gly Phe Ser Ser His Val Val Glu Asp Gly Val Leu Leu Gly Ala						
	350		355		360	
Val Gly Ala Tyr Asp Trp Asn Gly Ala Val Leu Lys Glu Thr Ser Ala						
	365		370		375	
Gly Lys Val Ile Pro Leu Arg Glu Ser Tyr Leu Lys Glu Phe Pro Glu						
	380		385		390	
Glu Leu Lys Asn His Gly Ala Tyr Leu Gly Tyr Thr Val Thr Ser Val						
	395		400		405	
Val Ser Ser Arg Gln Gly Arg Val Tyr Val Ala Gly Ala Pro Arg Phe						
	415		420		425	
Asn His Thr Gly Lys Val Ile Leu Phe Thr Met His Asn Asn Arg Ser						
	430		435		440	
Leu Thr Ile His Gln Ala Met Arg Gly Gln Gln Ile Gly Ser Tyr Phe						
	445		450		455	
Gly Ser Glu Ile Thr Ser Val Asp Ile Asp Gly Asp Gly Val Thr Asp						
	460		465		470	
Val Leu Leu Val Gly Ala Pro Met Tyr Phe Asn Glu Gly Arg Glu Arg						
	475		480		485	
Gly Lys Val Tyr Val Tyr Glu Leu Arg Gln Asn Arg Phe Val Tyr Asn						
	495		500		505	
Gly Thr Leu Lys Asp Ser His Ser Tyr Gln Asn Ala Arg Phe Gly Ser						
	510		515		520	
Ser Ile Ala Ser Val Arg Asp Leu Asn Gln Asp Ser Tyr Asn Asp Val						
	525		530		535	
Val Val Gly Ala Pro Leu Glu Asp Asn His Ala Gly Ala Ile Tyr Ile						
	540		545		550	
Phe His Gly Phe Arg Gly Ser Ile Leu Lys Thr Pro Lys Gln Arg Ile						
	555		560		565	
Thr Ala Ser Glu Leu Ala Thr Gly Leu Gln Tyr Phe Gly Cys Ser Ile						
	575		580		585	
His Gly Gln Leu Asp Leu Asn Glu Asp Gly Leu Ile Asp Leu Ala Val						
	590		595		600	
Gly Ala Leu Gly Asn Ala Val Ile Leu Trp Ser Arg Pro Val Val Gln						
	605		610		615	
Ile Asn Ala Ser Leu His Phe Glu Pro Ser Lys Ile Asn Ile Phe His						
	620		625		630	
Arg Asp Cys Lys Arg Ser Gly Arg Asp Ala Thr Cys Leu Ala Ala Phe						
	635		640		645	
Leu Cys Phe Thr Pro Ile Phe Leu Ala Pro His Phe Gln Thr Thr Thr						
	655		660		665	
Val Gly Ile Arg Tyr Asn Ala Thr Met Asp Glu Arg Arg Tyr Thr Pro						
	670		675		680	
Arg Ala His Leu Asp Glu Gly Gly Asp Arg Phe Thr Asn Arg Ala Val						
	685		690		695	
Leu Leu Ser Ser Gly Gln Glu Leu Cys Glu Arg Ile Asn Phe His Val						
	700		705		710	
Leu Asp Thr Ala Asp Tyr Val Lys Pro Val Thr Phe Ser Val Glu Tyr						
	715		720		725	
					730	

Ser Leu Glu Asp Pro Asp His Gly Pro Met Leu Asp Asp Gly Trp Pro  
 735 740 745  
 Thr Thr Leu Arg Val Ser Val Pro Phe Trp Asn Gly Cys Asn Glu Asp  
 750 755 760  
 Glu His Cys Val Pro Asp Leu Val Leu Asp Ala Arg Ser Asp Leu Pro  
 765 770 775  
 Thr Ala Met Glu Tyr Cys Gln Arg Val Leu Arg Lys Pro Ala Gln Asp  
 780 785 790  
 Cys Ser Ala Tyr Thr Leu Ser Phe Asp Thr Thr Val Phe Ile Ile Glu  
 795 800 805 810  
 Ser Thr Arg Gln Arg Val Ala Val Glu Ala Thr Leu Glu Asn Arg Gly  
 815 820 825  
 Glu Asn Ala Tyr Ser Thr Val Leu Asn Ile Ser Gln Ser Ala Asn Leu  
 830 835 840  
 Gln Phe Ala Ser Leu Ile Gln Lys Glu Asp Ser Asp Gly Ser Ile Glu  
 845 850 855  
 Cys Val Asn Glu Glu Arg Arg Leu Gln Lys Gln Val Cys Asn Val Ser  
 860 865 870  
 Tyr Pro Phe Phe Arg Ala Lys Ala Lys Val Ala Phe Arg Leu Asp Phe  
 875 880 885 890  
 Glu Phe Ser Lys Ser Ile Phe Leu His His Leu Glu Ile Glu Leu Ala  
 895 900 905  
 Ala Gly Ser Asp Ser Asn Glu Arg Asp Ser Thr Lys Glu Asp Asn Val  
 910 915 920  
 Ala Pro Leu Arg Phe His Leu Lys Tyr Glu Ala Asp Val Leu Phe Thr  
 925 930 935  
 Arg Ser Ser Ser Leu Ser His Tyr Glu Val Lys Pro Asn Ser Ser Leu  
 940 945 950  
 Glu Arg Tyr Asp Gly Ile Gly Pro Pro Phe Ser Cys Ile Phe Arg Ile  
 955 960 965 970  
 Gln Asn Leu Gly Leu Phe Pro Ile His Gly Met Met Met Lys Ile Thr  
 975 980 985  
 Ile Pro Ile Ala Thr Arg Ser Gly Asn Arg Leu Leu Lys Leu Arg Asp  
 990 995 1000  
 Phe Leu Thr Asp Glu Ala Asn Thr Ser Cys Asn Ile Trp Gly Asn Ser  
 1005 1010 1015  
 Thr Glu Tyr Arg Pro Thr Pro Val Glu Glu Asp Leu Arg Arg Ala Pro  
 1020 1025 1030  
 Gln Leu Asn His Ser Asn Ser Asp Val Val Ser Ile Asn Cys Asn Ile  
 1035 1040 1045 1050  
 Arg Leu Val Pro Asn Gln Glu Ile Asn Phe His Leu Leu Gly Asn Leu  
 1055 1060 1065  
 Trp Leu Arg Ser Leu Lys Ala Leu Lys Tyr Lys Ser Met Lys Ile Met  
 1070 1075 1080  
 Val Asn Ala Ala Leu Gln Arg Gln Phe His Ser Pro Phe Ile Phe Arg  
 1085 1090 1095  
 Glu Glu Asp Pro Ser Arg Gln Ile Val Phe Glu Ile Ser Lys Gln Glu  
 1100 1105 1110  
 Asp Trp Gln Val Pro  
 1115

<210> 7  
 <211> 182  
 <212> PRT  
 <213> Homo sapiens

<400> 7  
 Asp Ile Val Ile Val Leu Asp Gly Ser Asn Ser Ile Tyr Pro Trp Val  
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 Glu Val Gln His Phe Leu Ile Asn Ile Leu Lys Lys Phe Tyr Ile Gly  
 20 25 30

Pro Gly Gln Ile Gln Val Gly Val Val Gln Tyr Gly Glu Asp Val Val  
                   35                                  40                                  45  
 His Glu Phe His Leu Asn Asp Tyr Arg Ser Val Lys Asp Val Val Glu  
           50                                  55                                  60  
 Ala Ala Ser His Ile Glu Gln Arg Gly Gly Thr Glu Thr Arg Thr Ala  
           65                                  70                                  75                                  80  
 Phe Gly Ile Glu Phe Ala Arg Ser Glu Ala Phe Gln Lys Gly Gly Arg  
                                   85                                  90                                  95  
 Lys Gly Ala Lys Lys Val Met Ile Val Ile Thr Asp Gly Glu Ser His  
                                   100                                  105                                  110  
 Asp Ser Pro Asp Leu Glu Lys Val Ile Gln Gln Ser Glu Arg Asp Asn  
           115                                  120                                  125  
 Val Thr Arg Tyr Ala Val Ala Val Leu Gly Tyr Tyr Asn Arg Arg Gly  
           130                                  135                                  140  
 Ile Asn Pro Glu Thr Phe Leu Asn Glu Ile Lys Tyr Ile Ala Ser Asp  
 145                                  150                                  155                                  160  
 Pro Asp Asp Lys His Phe Phe Asn Val Thr Asp Glu Ala Ala Leu Lys  
                                   165                                  170                                  175  
 Asp Ile Val Asp Ala Leu  
                                   180

<210> 8  
 <211> 36  
 <212> PRT  
 <213> Homo sapiens

<400> 8  
 Ala Phe Phe Gly Tyr Thr Val Gln Gln His Asp Ile Ser Gly Asn Lys  
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 Trp Leu Val Val Gly Ala Pro Leu Glu Thr Asn Gly Tyr Gln Lys Thr  
                                   20                                  25                                  30  
 Gly Asp Val Tyr  
                                   35

<210> 9  
 <211> 43  
 <212> PRT  
 <213> Homo sapiens

<400> 9  
 Asp Asn Ser Phe Leu Ala Cys Ser Pro Leu Trp Ser His Glu Cys Gly  
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 Ser Ser Tyr Tyr Thr Thr Gly Met Cys Ser Arg Val Asn Ser Asn Phe  
                                   20                                  25                                  30  
 Arg Phe Ser Lys Thr Val Ala Pro Ala Leu Gln  
                                   35                                  40

<210> 10  
 <211> 26  
 <212> PRT  
 <213> Homo sapiens

<400> 10  
 Ser Gln Thr Gly Phe Ser Ser His Val Val Glu Asp Gly Val Leu Leu  
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 Gly Ala Val Gly Ala Tyr Asp Trp Asn Gly  
                                   20                                  25

<210> 11  
 <211> 35  
 <212> PRT

<213> Homo sapiens

<400> 11  
His Gly Ala Tyr Leu Gly Tyr Thr Val Thr Ser Val Val Ser Ser Arg  
1 5 10 15  
Gln Gly Arg Val Tyr Val Ala Gly Ala Pro Arg Phe Asn His Thr Gly  
20 25 30  
Lys Val Ile  
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<210> 12  
<211> 39  
<212> PRT  
<213> Homo sapiens

<400> 12  
Ser Tyr Phe Gly Ser Glu Ile Thr Ser Val Asp Ile Asp Gly Asp Gly  
1 5 10 15  
Val Thr Asp Val Leu Leu Val Gly Ala Pro Met Tyr Phe Asn Glu Gly  
20 25 30  
Arg Glu Arg Gly Lys Val Tyr  
35

<210> 13  
<211> 36  
<212> PRT  
<213> Homo sapiens

<400> 13  
Ala Arg Phe Gly Ser Ser Ile Ala Ser Val Arg Asp Leu Asn Gln Asp  
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Ser Tyr Asn Asp Val Val Val Gly Ala Pro Leu Glu Asp Asn His Ala  
20 25 30  
Gly Ala Ile Tyr  
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<210> 14  
<211> 39  
<212> PRT  
<213> Homo sapiens

<400> 14  
Gln Tyr Phe Gly Cys Ser Ile His Gly Gln Leu Asp Leu Asn Glu Asp  
1 5 10 15  
Gly Leu Ile Asp Leu Ala Val Gly Ala Leu Gly Asn Ala Val Ile Leu  
20 25 30  
Trp Ser Arg Pro Val Val Gln  
35

<210> 15  
<211> 23  
<212> PRT  
<213> Homo sapiens

<400> 15  
Ile Trp Ile Ile Val Gly Ser Thr Leu Gly Gly Leu Leu Leu Leu Ala  
1 5 10 15  
Leu Leu Val Leu Ala Leu Trp  
20

<210> 16

<211> 24  
 <212> PRT  
 <213> Homo sapiens

<400> 16  
 Lys Leu Gly Phe Phe Arg Ser Ala Arg Arg Arg Arg Glu Pro Gly Leu  
 1 5 10 15  
 Asp Pro Thr Pro Lys Val Leu Glu  
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<210> 17  
 <211> 3884  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (22)...(3522)

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 Met Glu Leu Pro Phe Val Thr His Leu Phe  
 1 5 10  
 ttg ccc ctg gtg ttc ctg aca ggt ctc tgc tcc ccc ttt aac ctg gat 99  
 Leu Pro Leu Val Phe Leu Thr Gly Leu Cys Ser Pro Phe Asn Leu Asp  
 15 20 25  
 gaa cat cac cca cgc cta ttc cca ggg cca cca gaa gct gaa ttt gga 147  
 Glu His His Pro Arg Leu Phe Pro Gly Pro Pro Glu Ala Glu Phe Gly  
 30 35 40  
 tac agt gtc tta caa cat gtt ggg ggt gga cag cga tgg atg ctg gtg 195  
 Tyr Ser Val Leu Gln His Val Gly Gly Gly Gln Arg Trp Met Leu Val  
 45 50 55  
 ggc gcc ccc tgg gat ggg cct tca ggc gac cgg agg ggg gac gtt tat 243  
 Gly Ala Pro Trp Asp Gly Pro Ser Gly Asp Arg Arg Gly Asp Val Tyr  
 60 65 70  
 cgc tgc cct gta ggg ggg gcc cac aat gcc cca tgt gcc aag ggc cac 291  
 Arg Cys Pro Val Gly Gly Ala His Asn Ala Pro Cys Ala Lys Gly His  
 75 80 85 90  
 tta ggt gac tac caa ctg gga aat tca tct cat cct gct gtg aat atg 339  
 Leu Gly Asp Tyr Gln Leu Gly Asn Ser Ser His Pro Ala Val Asn Met  
 95 100 105  
 cac ctg ggg atg tct ctg tta gag aca gat ggt gat ggg gga ttc atg 387  
 His Leu Gly Met Ser Leu Leu Glu Thr Asp Gly Asp Gly Gly Phe Met  
 110 115 120  
 gcc tgt gcc cct ctc tgg tct cgt gct tgt ggc agc tct gtc ttc agt 435  
 Ala Cys Ala Pro Leu Trp Ser Arg Ala Cys Gly Ser Ser Val Phe Ser  
 125 130 135  
 tct ggg ata tgt gcc cgt gtg gat gct tca ttc cag cct cag gga agc 483  
 Ser Gly Ile Cys Ala Arg Val Asp Ala Ser Phe Gln Pro Gln Gly Ser  
 140 145 150  
 ctg gca ccc act gcc caa cgc tgc cca aca tac atg gat gtt gtc att 531

Leu 155	Ala	Pro	Thr	Ala	Gln 160	Arg	Cys	Pro	Thr	Tyr 165	Met	Asp	Val	Val	Ile 170	
gtc	ttg	gat	ggc	tcc	aac	agc	atc	tac	ccc	tgg	tct	gaa	gtt	cag	acc	579
Val	Leu	Asp	Gly	Ser 175	Asn	Ser	Ile	Tyr	Pro 180	Trp	Ser	Glu	Val	Gln 185	Thr	
ttc	cta	cga	aga	ctg	gta	ggg	aaa	ctg	ttt	att	gac	cca	gaa	cag	ata	627
Phe	Leu	Arg	Arg	Leu 190	Val	Gly	Lys	Leu	Phe 195	Ile	Asp	Pro	Glu	Gln 200	Ile	
cag	gtg	gga	ctg	gta	cag	tat	ggg	gag	agc	cct	gta	cat	gag	tgg	tcc	675
Gln	Val	Gly	Leu	Val 205	Gln	Tyr	Gly	Glu	Ser 210	Pro	Val	His	Glu	Trp 215	Ser	
ctg	gga	gat	ttc	cga	acg	aag	gaa	gaa	gtg	gtg	aga	gca	gca	aag	aac	723
Leu	Gly	Asp	Phe	Arg 220	Thr	Lys	Glu	Glu	Val 225	Val	Arg	Ala	Ala	Lys 230	Asn	
ctc	agt	cgg	cgg	gag	gga	cga	gaa	aca	aag	act	gcc	caa	gca	ata	atg	771
Leu	Ser	Arg	Arg	Glu 235	Gly	Arg	Glu	Thr	Lys 240	Thr	Ala	Gln	Ala	Ile 245	Met 250	
gtg	gcc	tgc	aca	gaa	ggg	ttc	agt	cag	tcc	cat	ggg	ggc	cga	ccc	gag	819
Val	Ala	Cys	Thr 255	Glu	Gly	Phe	Ser	Gln	Ser 260	His	Gly	Gly	Arg	Pro 265	Glu	
gct	gcc	agg	cta	ctg	gtg	gtt	gtc	act	gat	gga	gag	tcc	cat	gat	gga	867
Ala	Ala	Arg	Leu 270	Leu	Val	Val	Val	Thr	Asp 275	Gly	Glu	Ser	His	Asp 280	Gly	
gag	gag	ctt	cct	gca	gca	cta	aag	gcc	tgt	gag	gct	gga	aga	gtg	aca	915
Glu	Glu	Leu 285	Pro	Ala	Ala	Leu	Lys	Ala	Cys 290	Glu	Ala	Gly	Arg	Val 295	Thr	
cgc	tat	ggg	att	gca	gtc	ctt	ggg	cac	tac	ctc	cgg	cgg	cag	cga	gat	963
Arg	Tyr	Gly	Ile 300	Ala	Val	Leu	Gly	His	Tyr 305	Leu	Arg	Arg	Gln	Arg 310	Asp	
ccc	agc	tct	ttc	ctg	aga	gaa	att	aga	act	att	gcc	agt	gat	cca	gat	1011
Pro	Ser	Ser	Phe 315	Leu	Arg	Glu	Ile 320	Arg	Thr 325	Ile	Ala	Ser	Asp	Pro 330	Asp	
gag	cga	ttc	ttc	ttc	aat	gtc	aca	gat	gag	gct	gct	ctg	act	gac	att	1059
Glu	Arg	Phe	Phe 335	Phe	Asn	Val	Thr	Asp	Glu 340	Ala	Ala	Leu	Thr	Asp 345	Ile	
gtg	gat	gca	cta	gga	gat	cgg	att	ttt	ggc	ctt	gaa	ggg	tcc	cat	gca	1107
Val	Asp	Ala	Leu 350	Gly	Asp	Arg	Ile 355	Phe	Gly	Leu	Glu	Gly	Ser	His 360	Ala	
gaa	aac	gaa	agc	tcc	ttt	ggg	ctg	gaa	atg	tct	cag	att	ggg	ttc	tcc	1155
Glu	Asn	Glu	Ser 365	Ser	Phe	Gly	Leu 370	Glu	Met	Ser	Gln	Ile	Gly	Phe 375	Ser	
act	cat	cgg	cta	aag	gat	ggg	att	ctt	ttt	ggg	atg	gtg	ggg	gcc	tat	1203
Thr	His	Arg	Leu 380	Lys	Asp	Gly	Ile 385	Leu	Phe 390	Gly	Met	Val	Gly	Ala	Tyr	
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Asp	Trp	Gly	Gly	Ser	Val	Leu	Trp	Leu	Glu	Gly	Gly	His	Arg	Leu	Phe	

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Pro Pro Arg Met Ala Leu Glu Asp Glu Phe Pro Pro Ala Leu Gln Asn	415	420	425	
cat gca gcc tac ctg ggt tac tct gtt tct tcc atg ctt ttg cgg ggt				1347
His Ala Ala Tyr Leu Gly Tyr Ser Val Ser Ser Met Leu Leu Arg Gly	430	435	440	
gga cgc cgc ctg ttt ctc tct ggg gct cct cga ttt aga cat cga gga				1395
Gly Arg Arg Leu Phe Leu Ser Gly Ala Pro Arg Phe Arg His Arg Gly	445	450	455	
aaa gtc atc gcc ttc cag ctt aag aaa gat ggg gct gtg agg gtt gcc				1443
Lys Val Ile Ala Phe Gln Leu Lys Lys Asp Gly Ala Val Arg Val Ala	460	465	470	
cag agc ctc cag ggg gag cag att ggt tca tac ttt ggc agt gag ctc				1491
Gln Ser Leu Gln Gly Glu Gln Ile Gly Ser Tyr Phe Gly Ser Glu Leu	475	480	485	490
tgc cca ttg gat aca gat agg gat gga aca act gat gtc tta ctt gtg				1539
Cys Pro Leu Asp Thr Asp Arg Asp Gly Thr Thr Asp Val Leu Leu Val	495	500	505	
gct gcc ccc atg ttc ctg gga ccc cag aac aag gaa aca gga cgt gtt				1587
Ala Ala Pro Met Phe Leu Gly Pro Gln Asn Lys Glu Thr Gly Arg Val	510	515	520	
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Tyr Val Tyr Leu Val Gly Gln Gln Ser Leu Leu Thr Leu Gln Gly Thr	525	530	535	
ctt cag cca gaa ccc ccc cag gat gct cgg ttt ggc ttt gcc atg gga				1683
Leu Gln Pro Glu Pro Pro Gln Asp Ala Arg Phe Gly Phe Ala Met Gly	540	545	550	
gct ctt cct gat ctg aac caa gat ggt ttt gct gat gtg gct gtg ggg				1731
Ala Leu Pro Asp Leu Asn Gln Asp Gly Phe Ala Asp Val Ala Val Gly	555	560	565	570
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Ala Pro Leu Glu Asp Gly His Gln Gly Ala Leu Tyr Leu Tyr His Gly	575	580	585	
acc cag agt gga gtc agg ccc cat cct gcc cag agg att gct gct gcc				1827
Thr Gln Ser Gly Val Arg Pro His Pro Ala Gln Arg Ile Ala Ala Ala	590	595	600	
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Ser Met Pro His Ala Leu Ser Tyr Phe Gly Arg Ser Val Asp Gly Arg	605	610	615	
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Leu Asp Leu Asp Gly Asp Asp Leu Val Asp Val Ala Val Gly Ala Gln	620	625	630	
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Gly Ala Ala Ile Leu Leu Ser Ser Arg Pro Ile Val His Leu Thr Pro	635	640	645	650



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Ser Leu Glu Val Thr Pro Gln Ala Ile Ser Val Val Gln Arg Asp Cys	
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Arg Arg Arg Gly Gln Glu Ala Val Cys Leu Thr Ala Ala Leu Cys Phe	
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Gln Val Thr Ser Arg Thr Pro Gly Arg Trp Asp His Gln Phe Tyr Met	
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Phe Asp Gly Ser Gly Gln Arg Leu Ser Pro Arg Arg Leu Arg Leu Ser	
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Val Gly Asn Val Thr Cys Glu Gln Leu His Phe His Val Leu Asp Thr	
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Ser Asp Tyr Leu Arg Pro Val Ala Leu Thr Val Thr Phe Ala Leu Asp	
750 755 760	
aat act aca aag cca ggg cct gtg ctg aat gag ggc tca ccc acc tct	2355
Asn Thr Thr Lys Pro Gly Pro Val Leu Asn Glu Gly Ser Pro Thr Ser	
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ata caa aag ctg gtc ccc ttc tca aag gat tgt ggc cct gac aat gaa	2403
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Cys Val Thr Asp Leu Val Leu Gln Val Asn Met Asp Ile Arg Gly Ser	
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Arg Lys Ala Pro Phe Val Val Arg Gly Gly Arg Arg Lys Val Leu Val	
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Ser Thr Thr Leu Glu Asn Arg Lys Glu Asn Ala Tyr Asn Thr Ser Leu	
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agt atc atc ttc tct aga aac ctc cac ctg gcc agt ctc act cct cag	2595
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860 865 870	
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Arg Leu Cys Ser Val Gly His Pro Val Phe Gln Thr Gly Ala Lys Val	
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Thr Phe Leu Leu      Phe Glu Phe Ser Cys Ser Ser Leu Leu Ser Gln	
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Val Phe Gly Lys Leu Thr Ala Ser Ser Asp Ser Leu Glu Arg Asn Gly	
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Pro His Leu Leu Phe Ser Ser Glu Ser Thr Leu His Arg Tyr Glu Val	
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His Pro Tyr Gly Thr Leu Pro Val Gly Pro Gly Pro Glu Phe Lys Thr	
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Ile Ser Ala Leu Leu Pro Ala Val Ala His Gly Gly Asn Tyr Phe Leu	
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Ser Leu Ser Gln Val Ile Thr Asn Asn Ala Ser Cys Ile Val Gln Asn	
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Leu Thr Glu Pro Pro Gly Pro Pro Val His Pro Glu Glu Leu Gln His	
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Thr Asn Arg Leu Asn Gly Ser Asn Thr Gln Cys Gln Val Val Arg Cys	
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His Leu Gly Gln Leu Ala Lys Gly Thr Glu Val Ser Val Gly Leu Leu	
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Arg Leu Val His Asn Glu Phe Phe Arg Arg Ala Lys Phe Lys Ser Leu	
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Thr Val Val Ser Thr Phe Glu Leu Gly Thr Glu Glu Gly Ser Val Leu	
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Gln Leu Thr Glu Ala Ser Arg Trp Ser Glu Ser Leu Leu Glu Val Val	
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 Tyr Gly Glu Ser Pro Val His Glu Trp Ser Leu Gly Asp Phe Arg Thr  
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 225 230 235 240  
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 Phe Ser Gln Ser His Gly Gly Arg Pro Glu Ala Ala Arg Leu Leu Val  
 260 265 270  
 Val Val Thr Asp Gly Glu Ser His Asp Gly Glu Glu Leu Pro Ala Ala  
 275 280 285  
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Val Thr Asp Glu	Ala Ala Leu Thr Asp	Ile Val Asp Ala Leu Gly Asp
	340	345
Arg Ile Phe Gly	Leu Glu Gly Ser His Ala	Glu Asn Glu Ser Ser Phe
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Gly Leu Glu Met	Ser Gln Ile Gly Phe Ser	Thr His Arg Leu Lys Asp
	370	375
Gly Ile Leu Phe	Gly Met Val Gly Ala Tyr	Asp Trp Gly Gly Ser Val
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Leu Trp Leu Glu	Gly Gly His Arg Leu Phe	Pro Pro Arg Met Ala Leu
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Glu Asp Glu Phe	Pro Pro Ala Leu Gln	Asn His Ala Ala Tyr Leu Gly
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Tyr Ser Val Ser	Ser Met Leu Leu Arg Gly	Gly Arg Arg Leu Phe Leu
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Ser Gly Ala Pro	Arg Phe Arg His Arg Gly	Lys Val Ile Ala Phe Gln
	450	455
Leu Lys Lys Asp	Gly Ala Val Arg Val Ala	Gln Ser Leu Gln Gly Glu
465	470	475
Gln Ile Gly Ser	Tyr Phe Gly Ser Glu Leu	Cys Pro Leu Asp Thr Asp
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Arg Asp Gly Thr	Thr Asp Val Leu Leu Val	Ala Ala Pro Met Phe Leu
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Gly Pro Gln Asn	Lys Glu Thr Gly Arg Val	Tyr Val Tyr Leu Val Gly
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Gln Gln Ser Leu	Leu Thr Leu Gln Gly Thr	Leu Gln Pro Glu Pro Pro
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Gln Asp Ala Arg	Phe Gly Phe Ala Met Gly	Ala Leu Pro Asp Leu Asn
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Pro His Pro Ala	Gln Arg Ile Ala Ala Ala	Ser Met Pro His Ala Leu
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Ser Ser Arg Pro	Ile Val His Leu Thr Pro	Ser Leu Glu Val Thr Pro
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Gln Ala Ile Ser	Val Val Gln Arg Asp Cys	Arg Arg Arg Gly Gln Glu
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Ala Val Cys Leu	Thr Ala Ala Leu Cys Phe	Gln Val Thr Ser Arg Thr
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Asp Glu Trp Thr	Ala Gly Ala Arg Ala Ala	Phe Asp Gly Ser Gly Gln
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Arg Leu Ser Pro	Arg Arg Leu Arg Leu Ser	Val Gly Asn Val Thr Cys
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Glu Gln Leu His	Phe His Val Leu Asp Thr	Ser Asp Tyr Leu Arg Pro
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Val Ala Leu Thr	Val Thr Phe Ala Leu Asp	Asn Thr Thr Lys Pro Gly
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Pro Val Leu Asn	Glu Gly Ser Pro Thr Ser	Ile Gln Lys Leu Val Pro
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 Leu Gln Val Asn Met Asp Ile Arg Gly Ser Arg Lys Ala Pro Phe Val  
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 Asn Leu His Leu Ala Ser Leu Thr Pro Gln Arg Glu Ser Pro Ile Lys  
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54

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Ile	Ser	Gln	Ser	Glu	Asn	Leu	Gln	Phe	Ala	Ser	Leu	Ile	Gln	Lys	Asp		
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cag ttt gcc agc ctg atc cag aag gat gac tca gac aac agc atc gag Gln Phe Ala Ser Leu Ile Gln Lys Asp Asp Ser Asp Asn Ser Ile Glu 865 870 875 880				2640

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tac ccc ttc ttc aga gcc aag gcc aag gtg gct ttc cgt ctg gat ttc Tyr Pro Phe Phe Arg Ala Lys Ala Lys Val Ala Phe Arg Leu Asp Phe 900 905 910	2736
gag ttc agc aag tct gtg ttt ctg cac cat ctt cag atc cat ctg ggt Glu Phe Ser Lys Ser Val Phe Leu His His Leu Gln Ile His Leu Gly 915 920 925	2784
gcc ggc agt gac agt cac gag caa gac agc acc gca gac gat aac acg Ala Gly Ser Asp Ser His Glu Gln Asp Ser Thr Ala Asp Asp Asn Thr 930 935 940	2832
gcc ctc ctg cgc ttc cac ctc aaa tat gaa gca gac gtc ctc ttt acc Ala Leu Leu Arg Phe His Leu Lys Tyr Glu Ala Asp Val Leu Phe Thr 945 950 955 960	2880
aga agc agc agc ctg agc cac ttc gag gtc aag gca aac agc tca ctt Arg Ser Ser Ser Leu Ser His Phe Glu Val Lys Ala Asn Ser Ser Leu 965 970 975	2928
gag agc tat gat ggc atc gga cct ccg ttc aac tgt gtt ttc aag gtg Glu Ser Tyr Asp Gly Ile Gly Pro Pro Phe Asn Cys Val Phe Lys Val 980 985 990	2976
cag aac ctg ggc ttt ttc ccc atc cac ggg gtg atg atg aag atc act Gln Asn Leu Gly Phe Phe Pro Ile His Gly Val Met Met Lys Ile Thr 995 1000 1005	3024
gtg ccc atc gcc acc agg ggt ggc aac cgc ctg ctg atg ttg agg gac Val Pro Ile Ala Thr Arg Gly Gly Asn Arg Leu Leu Met Leu Arg Asp 1010 1015 1020	3072
ttc ttc acc gac cag ggc aac aca tcc tgt aac atc tgg ggg aac agc Phe Phe Thr Asp Gln Gly Asn Thr Ser Cys Asn Ile Trp Gly Asn Ser 1025 1030 1035 1040	3120
aca gag tac agg agt acc cca act gag gaa gat ctg agc cat gcc cca Thr Glu Tyr Arg Ser Thr Pro Thr Glu Glu Asp Leu Ser His Ala Pro 1045 1050 1055	3168
cag agg aat cac agc aac tcc gac gtg gtc tcc atc atc tgc aac ctg Gln Arg Asn His Ser Asn Ser Asp Val Val Ser Ile Ile Cys Asn Leu 1060 1065 1070	3216
agg ctg gcc ccc agc cag gag acc agc ttc tac ctg gtg gga aac ctg Arg Leu Ala Pro Ser Gln Glu Thr Ser Phe Tyr Leu Val Gly Asn Leu 1075 1080 1085	3264
tgg ctg aca tct ctg aaa gca ctc aag tac agg tct ctg aag atc aca Trp Leu Thr Ser Leu Lys Ala Leu Lys Tyr Arg Ser Leu Lys Ile Thr 1090 1095 1100	3312
gtc aac gcc gcc ttg cag agg cag ttc cac agc ccc ttc atc ttc cga Val Asn Ala Ala Leu Gln Arg Gln Phe His Ser Pro Phe Ile Phe Arg 1105 1110 1115 1120	3360

gag gaa gac cct agc cgc cag gtc aca ttt gag atc tcc aag caa gaa	3408
Glu Glu Asp Pro Ser Arg Gln Val Thr Phe Glu Ile Ser Lys Gln Glu	
1125 1130 1135	
gac tgg cag gtc ccc atc tgg atc atc gtg ggc agc act ctg ggg ggc	3456
Asp Trp Gln Val Pro Ile Trp Ile Ile Val Gly Ser Thr Leu Gly Gly	
1140 1145 1150	
ctc ttg ctg ctg gcc ctg ctg gtc ctg gca ctg tgg aag ctc ggt ttt	3504
Leu Leu Leu Leu Ala Leu Leu Val Leu Ala Leu Trp Lys Leu Gly Phe	
1155 1160 1165	
ttt aaa agt gcc aag cgc aag agg gaa cct ggc cta ggc ccc atc ccc	3552
Phe Lys Ser Ala Lys Arg Lys Arg Glu Pro Gly Leu Gly Pro Ile Pro	
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aaa gag ctc aag	3564
Lys Glu Leu Lys	
1185	

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<220>  
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<400> 21

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Ile Ala Gly Pro Ser Ala Ala Phe Phe Gly Tyr Thr Val Gln Gln His	
15 20 25	
Asp Ile Ser Gly Lys Lys Trp Leu Val Val Gly Ala Pro Met Glu Thr	
30 35 40	
Asn Gly His Gln Lys Thr Gly Asp Val Tyr Lys Cys Pro Val Thr Gln	
45 50 55	
Gly Asn Cys Thr Lys Leu Asn Leu Gly Arg Val Thr Leu Ser Asn Val	
60 65 70	
Ser Glu Arg Lys Asp Asn Met Arg Leu Gly Leu Ser Leu Ala Thr Asn	
75 80 85 90	
Pro Lys Asp Asn Ser Phe Leu Ala Cys Ser Pro Leu Trp Ser His Glu	
95 100 105	
Cys Gly Ser Ser Tyr Tyr Thr Thr Gly Met Cys Ser Arg Val Asn Ser	
110 115 120	
Asn Phe Arg Phe Ser Lys Thr Val Ala Pro Ala Leu Gln Arg Cys Gln	
125 130 135	
Thr Tyr Met Asp Ile Val Ile Val Leu Asp Gly Ser Asn Ser Ile Tyr	
140 145 150	
Pro Trp Val Glu Val Gln His Phe Leu Ile Asn Ile Leu Lys Lys Phe	
155 160 165 170	
Tyr Ile Gly Pro Gly Gln Ile Gln Val Gly Ile Val Gln Tyr Gly Glu	
175 180 185	
Asp Ala Val His Glu Phe His Leu Asn Asp Tyr Arg Ser Val Lys Asp	
190 195 200	
Val Val Glu Ala Ala Ser His Ile Glu Gln Arg Gly Gly Thr Glu Thr	
205 210 215	
Arg Thr Ala Phe Gly Ile Glu Phe Ala Arg Ser Glu Ala Phe Gln Lys	



220		225		230
Gly Gly Arg Lys Gly Ala Lys Lys Val Met Ile Val Ile Thr Asp Gly				
235		240		245
Glu Ser His Asp Ser Pro Asp Leu Glu Lys Val Ile Arg Gln Ser Glu				250
	255		260	265
Lys Asp Asn Val Thr Arg Tyr Ala Val Ala Val Leu Gly Tyr Tyr Asn				
	270		275	280
Arg Arg Gly Ile Asn Pro Glu Thr Phe Leu Asn Glu Ile Lys Tyr Ile				
	285		290	295
Ala Ser Asp Pro Asp Asp Lys His Phe Phe Asn Val Thr Asp Glu Ala				
	300		305	310
Ala Leu Lys Asp Ile Val Asp Ala Leu Gly Asp Arg Ile Phe Ser Leu				
315		320		325
Glu Gly Thr Asn Lys Asn Glu Thr Ser Phe Gly Leu Glu Met Ser Gln				
	335		340	345
Thr Gly Phe Ser Ser His Val Val Glu Asp Gly Ile Leu Leu Gly Ala				
	350		355	360
Val Gly Ala Tyr Asp Trp Asn Gly Ala Val Leu Lys Glu Thr Ser Ala				
	365		370	375
Gly Lys Val Ile Pro His Arg Glu Ser Tyr Leu Lys Glu Phe Pro Glu				
	380		385	390
Glu Leu Lys Asn His Ala Ala Tyr Leu Gly Tyr Thr Val Thr Ser Val				
395		400		405
Val Ser Ser Arg Gln Gly Arg Val Tyr Val Ala Gly Ala Pro Arg Phe				
	415		420	425
Asn His Thr Gly Lys Val Ile Leu Phe Ser Met His Asn Asn Arg Ser				
	430		435	440
Leu Thr Ile His Gln Ala Leu Arg Gly Glu Gln Ile Gly Ser Tyr Phe				
	445		450	455
Gly Ser Glu Ile Thr Ser Val Asp Val Asn Asp Asp Arg Val Thr Asp				
	460		465	470
Val Leu Leu Val Gly Ala Pro Met Tyr Phe Ser Glu Gly Arg Glu Arg				
475		480		485
Gly Lys Val Tyr Val Tyr Asn Leu Arg Gln Asn Arg Phe Val Tyr Asn				
	495		500	505
Gly Thr Leu Lys Asp Ser His Ser Tyr Gln Asn Ala Arg Phe Gly Ser				
	510		515	520
Cys Ile Ala Ser Val Gln Asp Leu Asn Gln Asp Ser Tyr Asn Asp Val				
	525		530	535
Val Val Gly Ala Pro Leu Glu Asp Ser His Arg Gly Ala Ile Tyr Ile				
	540		545	550
Phe His Gly Phe Gln Thr Asn Ile Leu Lys Lys Pro Met Gln Arg Ile				
555		560		565
Thr Ala Ser Glu Leu Ala Pro Gly Leu Gln His Phe Gly Cys Ser Ile				
	575		580	585
His Gly Gln Leu Asp Leu Asn Glu Asp Gly Leu Val Asp Leu Ala Val				
	590		595	600
Gly Ala Leu Gly Asn Ala Val Val Leu Trp Ala Arg Pro Val Val Gln				
	605		610	615
Ile Asn Ala Ser Leu His Phe Glu Pro Ser Lys Ile Asn Ile Phe His				
	620		625	630
Lys Asp Cys Lys Arg Asn Gly Arg Asp Ala Thr Cys Leu Ala Ala Phe				
635		640		645
Leu Cys Phe Ile Pro Ile Phe Leu Ala Pro His Phe Gln Thr Ala Thr				
	655		660	665
Val Gly Ile Arg Tyr Asn Ala Thr Met Asp Glu Arg Arg Tyr Met Pro				
	670		675	680
Arg Ala His Leu Asp Glu Gly Gly Asp Gln Phe Thr Asn Arg Ala Val				
	685		690	695
Leu Leu Ser Ser Gly Gln Glu His Cys Gln Arg Ile Asn Phe His Val				
	700		705	710

Leu Asp Thr Ala Asp Tyr Val Lys Pro Val Ala Phe Ser Val Glu Tyr  
 715 720 725 730  
 Ser Leu Glu Asp Pro Asp Asn Gly Pro Met Leu Asp Asn Gly Trp Pro  
 735 740 745  
 Thr Thr Leu Arg Val Ser Val Pro Phe Trp Asn Gly Cys Asn Glu Asp  
 750 755 760  
 Glu His Cys Val Pro Asp Leu Val Leu Asp Ala Arg Ser Asp Leu Pro  
 765 770 775  
 Thr Ala Met Glu Tyr Cys Gln Arg Val Leu Gly Arg Pro Ala Gln Asp  
 780 785 790  
 Cys Ser Ser Tyr Thr Leu Ser Phe Asp Thr Thr Val Phe Ile Ile Glu  
 795 800 805 810  
 Ser Thr Arg Arg Arg Val Ala Val Glu Ala Thr Leu Glu Asn Arg Gly  
 815 820 825  
 Glu Asn Ala Tyr Ser Ala Val Leu Asn Ile Ser Gln Ser Glu Asn Leu  
 830 835 840  
 Gln Phe Ala Ser Leu Ile Gln Lys Asp Asp Ser Asp Asn Ser Ile Glu  
 845 850 855  
 Cys Val Asn Glu Glu Arg Arg Leu His Lys Lys Val Cys Asn Val Ser  
 860 865 870  
 Tyr Pro Phe Phe Arg Ala Lys Ala Lys Val Ala Phe Arg Leu Asp Phe  
 875 880 885 890  
 Glu Phe Ser Lys Ser Val Phe Leu His His Leu Gln Ile His Leu Gly  
 895 900 905  
 Ala Gly Ser Asp Ser His Glu Gln Asp Ser Thr Ala Asp Asp Asn Thr  
 910 915 920  
 Ala Leu Leu Arg Phe His Leu Lys Tyr Glu Ala Asp Val Leu Phe Thr  
 925 930 935  
 Arg Ser Ser Ser Leu Ser His Phe Glu Val Lys Ala Asn Ser Ser Leu  
 940 945 950  
 Glu Ser Tyr Asp Gly Ile Gly Pro Pro Phe Asn Cys Val Phe Lys Val  
 955 960 965 970  
 Gln Asn Leu Gly Phe Phe Pro Ile His Gly Val Met Met Lys Ile Thr  
 975 980 985  
 Val Pro Ile Ala Thr Arg Gly Gly Asn Arg Leu Leu Met Leu Arg Asp  
 990 995 1000  
 Phe Phe Thr Asp Gln Gly Asn Thr Ser Cys Asn Ile Trp Gly Asn Ser  
 1005 1010 1015  
 Thr Glu Tyr Arg Ser Thr Pro Thr Glu Glu Asp Leu Ser His Ala Pro  
 1020 1025 1030  
 Gln Arg Asn His Ser Asn Ser Asp Val Val Ser Ile Ile Cys Asn Leu  
 1035 1040 1045 1050  
 Arg Leu Ala Pro Ser Gln Glu Thr Ser Phe Tyr Leu Val Gly Asn Leu  
 1055 1060 1065  
 Trp Leu Thr Ser Leu Lys Ala Leu Lys Tyr Arg Ser Leu Lys Ile Thr  
 1070 1075 1080  
 Val Asn Ala Ala Leu Gln Arg Gln Phe His Ser Pro Phe Ile Phe Arg  
 1085 1090 1095  
 Glu Glu Asp Pro Ser Arg Gln Val Thr Phe Glu Ile Ser Lys Gln Glu  
 1100 1105 1110  
 Asp Trp Gln Val Pro Ile Trp Ile Ile Val Gly Ser Thr Leu Gly Gly  
 1115 1120 1125 1130  
 Leu Leu Leu Leu Ala Leu Leu Val Leu Ala Leu Trp Lys Leu Gly Phe  
 1135 1140 1145  
 Phe Lys Ser Ala Lys Arg Lys Arg Glu Pro Gly Leu Gly Pro Ile Pro  
 1150 1155 1160  
 Lys Glu Leu Lys  
 1165

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 <211> 1166

<212> PRT  
 <213> Mus musculus

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 Ala Phe Phe Gly Tyr Thr Val Gln Gln His Asp Ile Ser Gly Lys Lys  
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 Trp Leu Val Val Gly Ala Pro Met Glu Thr Asn Gly His Gln Lys Thr  
 35 40 45  
 Gly Asp Val Tyr Lys Cys Pro Val Thr Gln Gly Asn Cys Thr Lys Leu  
 50 55 60  
 Asn Leu Gly Arg Val Thr Leu Ser Asn Val Ser Glu Arg Lys Asp Asn  
 65 70 75 80  
 Met Arg Leu Gly Leu Ser Leu Ala Thr Asn Pro Lys Asp Asn Ser Phe  
 85 90 95  
 Leu Ala Cys Ser Pro Leu Trp Ser His Glu Cys Gly Ser Ser Tyr Tyr  
 100 105 110  
 Thr Thr Gly Met Cys Ser Arg Val Asn Ser Asn Phe Arg Phe Ser Lys  
 115 120 125  
 Thr Val Ala Pro Ala Leu Gln Arg Cys Gln Thr Tyr Met Asp Ile Val  
 130 135 140  
 Ile Val Leu Asp Gly Ser Asn Ser Ile Tyr Pro Trp Val Glu Val Gln  
 145 150 155 160  
 His Phe Leu Ile Asn Ile Leu Lys Lys Phe Tyr Ile Gly Pro Gly Gln  
 165 170 175  
 Ile Gln Val Gly Ile Val Gln Tyr Gly Glu Asp Ala Val His Glu Phe  
 180 185 190  
 His Leu Asn Asp Tyr Arg Ser Val Lys Asp Val Val Glu Ala Ala Ser  
 195 200 205  
 His Ile Glu Gln Arg Gly Gly Thr Glu Thr Arg Thr Ala Phe Gly Ile  
 210 215 220  
 Glu Phe Ala Arg Ser Glu Ala Phe Gln Lys Gly Gly Arg Lys Gly Ala  
 225 230 235 240  
 Lys Lys Val Met Ile Val Ile Thr Asp Gly Glu Ser His Asp Ser Pro  
 245 250 255  
 Asp Leu Glu Lys Val Ile Arg Gln Ser Glu Lys Asp Asn Val Thr Arg  
 260 265 270  
 Tyr Ala Val Ala Val Leu Gly Tyr Tyr Asn Arg Arg Gly Ile Asn Pro  
 275 280 285  
 Glu Thr Phe Leu Asn Glu Ile Lys Tyr Ile Ala Ser Asp Pro Asp Asp  
 290 295 300  
 Lys His Phe Phe Asn Val Thr Asp Glu Ala Ala Leu Lys Asp Ile Val  
 305 310 315 320  
 Asp Ala Leu Gly Asp Arg Ile Phe Ser Leu Glu Gly Thr Asn Lys Asn  
 325 330 335  
 Glu Thr Ser Phe Gly Leu Glu Met Ser Gln Thr Gly Phe Ser Ser His  
 340 345 350  
 Val Val Glu Asp Gly Ile Leu Leu Gly Ala Val Gly Ala Tyr Asp Trp  
 355 360 365  
 Asn Gly Ala Val Leu Lys Glu Thr Ser Ala Gly Lys Val Ile Pro His  
 370 375 380  
 Arg Glu Ser Tyr Leu Lys Glu Phe Pro Glu Glu Leu Lys Asn His Ala  
 385 390 395 400  
 Ala Tyr Leu Gly Tyr Thr Val Thr Ser Val Val Ser Ser Arg Gln Gly  
 405 410 415  
 Arg Val Tyr Val Ala Gly Ala Pro Arg Phe Asn His Thr Gly Lys Val  
 420 425 430  
 Ile Leu Phe Ser Met His Asn Asn Arg Ser Leu Thr Ile His Gln Ala  
 435 440 445  
 Leu Arg Gly Glu Gln Ile Gly Ser Tyr Phe Gly Ser Glu Ile Thr Ser

450		455		460	
Val Asp Val Asn Asp Asp Arg Val Thr Asp Val Leu Leu Val Gly Ala					
465		470		475	480
Pro Met Tyr Phe Ser Glu Gly Arg Glu Arg Gly Lys Val Tyr Val Tyr					
	485		490		495
Asn Leu Arg Gln Asn Arg Phe Val Tyr Asn Gly Thr Leu Lys Asp Ser					
	500		505		510
His Ser Tyr Gln Asn Ala Arg Phe Gly Ser Cys Ile Ala Ser Val Gln					
	515		520		525
Asp Leu Asn Gln Asp Ser Tyr Asn Asp Val Val Val Gly Ala Pro Leu					
	530		535		540
Glu Asp Ser His Arg Gly Ala Ile Tyr Ile Phe His Gly Phe Gln Thr					
545		550		555	560
Asn Ile Leu Lys Lys Pro Met Gln Arg Ile Thr Ala Ser Glu Leu Ala					
	565		570		575
Pro Gly Leu Gln His Phe Gly Cys Ser Ile His Gly Gln Leu Asp Leu					
	580		585		590
Asn Glu Asp Gly Leu Val Asp Leu Ala Val Gly Ala Leu Gly Asn Ala					
	595		600		605
Val Val Leu Trp Ala Arg Pro Val Val Gln Ile Asn Ala Ser Leu His					
	610		615		620
Phe Glu Pro Ser Lys Ile Asn Ile Phe His Lys Asp Cys Lys Arg Asn					
625		630		635	640
Gly Arg Asp Ala Thr Cys Leu Ala Ala Phe Leu Cys Phe Ile Pro Ile					
	645		650		655
Phe Leu Ala Pro His Phe Gln Thr Ala Thr Val Gly Ile Arg Tyr Asn					
	660		665		670
Ala Thr Met Asp Glu Arg Arg Tyr Met Pro Arg Ala His Leu Asp Glu					
	675		680		685
Gly Gly Asp Gln Phe Thr Asn Arg Ala Val Leu Leu Ser Ser Gly Gln					
	690		695		700
Glu His Cys Gln Arg Ile Asn Phe His Val Leu Asp Thr Ala Asp Tyr					
705		710		715	720
Val Lys Pro Val Ala Phe Ser Val Glu Tyr Ser Leu Glu Asp Pro Asp					
	725		730		735
Asn Gly Pro Met Leu Asp Asn Gly Trp Pro Thr Thr Leu Arg Val Ser					
	740		745		750
Val Pro Phe Trp Asn Gly Cys Asn Glu Asp Glu His Cys Val Pro Asp					
	755		760		765
Leu Val Leu Asp Ala Arg Ser Asp Leu Pro Thr Ala Met Glu Tyr Cys					
	770		775		780
Gln Arg Val Leu Gly Arg Pro Ala Gln Asp Cys Ser Ser Tyr Thr Leu					
785		790		795	800
Ser Phe Asp Thr Thr Val Phe Ile Ile Glu Ser Thr Arg Arg Arg Val					
	805		810		815
Ala Val Glu Ala Thr Leu Glu Asn Arg Gly Glu Asn Ala Tyr Ser Ala					
	820		825		830
Val Leu Asn Ile Ser Gln Ser Glu Asn Leu Gln Phe Ala Ser Leu Ile					
	835		840		845
Gln Lys Asp Asp Ser Asp Asn Ser Ile Glu Cys Val Asn Glu Glu Arg					
	850		855		860
Arg Leu His Lys Lys Val Cys Asn Val Ser Tyr Pro Phe Phe Arg Ala					
865		870		875	880
Lys Ala Lys Val Ala Phe Arg Leu Asp Phe Glu Phe Ser Lys Ser Val					
	885		890		895
Phe Leu His His Leu Gln Ile His Leu Gly Ala Gly Ser Asp Ser His					
	900		905		910
Glu Gln Asp Ser Thr Ala Asp Asp Asn Thr Ala Leu Leu Arg Phe His					
	915		920		925
Leu Lys Tyr Glu Ala Asp Val Leu Phe Thr Arg Ser Ser Ser Leu Ser					
	930		935		940

His Phe Glu Val Lys Ala Asn Ser Ser Leu Glu Ser Tyr Asp Gly Ile  
 945 950 955 960  
 Gly Pro Pro Phe Asn Cys Val Phe Lys Val Gln Asn Leu Gly Phe Phe  
 965 970 975  
 Pro Ile His Gly Val Met Met Lys Ile Thr Val Pro Ile Ala Thr Arg  
 980 985 990  
 Gly Gly Asn Arg Leu Leu Met Leu Arg Asp Phe Phe Thr Asp Gln Gly  
 995 1000 1005  
 Asn Thr Ser Cys Asn Ile Trp Gly Asn Ser Thr Glu Tyr Arg Ser Thr  
 1010 1015 1020  
 Pro Thr Glu Glu Asp Leu Ser His Ala Pro Gln Arg Asn His Ser Asn  
 1025 1030 1035 1040  
 Ser Asp Val Val Ser Ile Ile Cys Asn Leu Arg Leu Ala Pro Ser Gln  
 1045 1050 1055  
 Glu Thr Ser Phe Tyr Leu Val Gly Asn Leu Trp Leu Thr Ser Leu Lys  
 1060 1065 1070  
 Ala Leu Lys Tyr Arg Ser Leu Lys Ile Thr Val Asn Ala Ala Leu Gln  
 1075 1080 1085  
 Arg Gln Phe His Ser Pro Phe Ile Phe Arg Glu Glu Asp Pro Ser Arg  
 1090 1095 1100  
 Gln Val Thr Phe Glu Ile Ser Lys Gln Glu Asp Trp Gln Val Pro Ile  
 1105 1110 1115 1120  
 Trp Ile Ile Val Gly Ser Thr Leu Gly Gly Leu Leu Leu Ala Leu  
 1125 1130 1135  
 Leu Val Leu Ala Leu Trp Lys Leu Gly Phe Phe Lys Ser Ala Lys Arg  
 1140 1145 1150  
 Lys Arg Glu Pro Gly Leu Gly Pro Ile Pro Lys Glu Leu Lys  
 1155 1160 1165

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 <213> Mus musculus

<220>  
 <221> SIGNAL  
 <222> (1)...(22)

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 Pro Gly Phe Thr Asp Thr  
 -5

<210> 24  
 <211> 1141  
 <212> PRT  
 <213> Mus musculus

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 Ile Ala Gly Pro Ser Ala Ala Phe Phe Gly Tyr Thr Val Gln Gln His  
 35 40 45  
 Asp Ile Ser Gly Lys Lys Trp Leu Val Val Gly Ala Pro Met Glu Thr  
 50 55 60  
 Asn Gly His Gln Lys Thr Gly Asp Val Tyr Lys Cys Pro Val Thr Gln  
 65 70 75 80  
 Gly Asn Cys Thr Lys Leu Asn Leu Gly Arg Val Thr Leu Ser Asn Val



Phe	His	Gly	Phe	Gln	Thr	Asn	Ile	Leu	Lys	Lys	Pro	Met	Gln	Arg	Ile
			580					585					590		
Thr	Ala	Ser	Glu	Leu	Ala	Pro	Gly	Leu	Gln	His	Phe	Gly	Cys	Ser	Ile
		595					600					605			
His	Gly	Gln	Leu	Asp	Leu	Asn	Glu	Asp	Gly	Leu	Val	Asp	Leu	Ala	Val
	610					615					620				
Gly	Ala	Leu	Gly	Asn	Ala	Val	Val	Leu	Trp	Ala	Arg	Pro	Val	Val	Gln
625					630					635					640
Ile	Asn	Ala	Ser	Leu	His	Phe	Glu	Pro	Ser	Lys	Ile	Asn	Ile	Phe	His
			645						650					655	
Lys	Asp	Cys	Lys	Arg	Asn	Gly	Arg	Asp	Ala	Thr	Cys	Leu	Ala	Ala	Phe
		660						665					670		
Leu	Cys	Phe	Ile	Pro	Ile	Phe	Leu	Ala	Pro	His	Phe	Gln	Thr	Ala	Thr
		675					680					685			
Val	Gly	Ile	Arg	Tyr	Asn	Ala	Thr	Met	Asp	Glu	Arg	Arg	Tyr	Met	Pro
	690					695					700				
Arg	Ala	His	Leu	Asp	Glu	Gly	Gly	Asp	Gln	Phe	Thr	Asn	Arg	Ala	Val
705					710					715					720
Leu	Leu	Ser	Ser	Gly	Gln	Glu	His	Cys	Gln	Arg	Ile	Asn	Phe	His	Val
			725						730					735	
Leu	Asp	Thr	Ala	Asp	Tyr	Val	Lys	Pro	Val	Ala	Phe	Ser	Val	Glu	Tyr
		740						745					750		
Ser	Leu	Glu	Asp	Pro	Asp	Asn	Gly	Pro	Met	Leu	Asp	Asn	Gly	Trp	Pro
		755					760					765			
Thr	Thr	Leu	Arg	Val	Ser	Val	Pro	Phe	Trp	Asn	Gly	Cys	Asn	Glu	Asp
	770					775					780				
Glu	His	Cys	Val	Pro	Asp	Leu	Val	Leu	Asp	Ala	Arg	Ser	Asp	Leu	Pro
785					790					795					800
Thr	Ala	Met	Glu	Tyr	Cys	Gln	Arg	Val	Leu	Gly	Arg	Pro	Ala	Gln	Asp
			805							810				815	
Cys	Ser	Ser	Tyr	Thr	Leu	Ser	Phe	Asp	Thr	Thr	Val	Phe	Ile	Ile	Glu
		820						825					830		
Ser	Thr	Arg	Arg	Arg	Val	Ala	Val	Glu	Ala	Thr	Leu	Glu	Asn	Arg	Gly
		835					840					845			
Glu	Asn	Ala	Tyr	Ser	Ala	Val	Leu	Asn	Ile	Ser	Gln	Ser	Glu	Asn	Leu
	850					855					860				
Gln	Phe	Ala	Ser	Leu	Ile	Gln	Lys	Asp	Asp	Ser	Asp	Asn	Ser	Ile	Glu
865					870					875					880
Cys	Val	Asn	Glu	Glu	Arg	Arg	Leu	His	Lys	Lys	Val	Cys	Asn	Val	Ser
			885						890					895	
Tyr	Pro	Phe	Phe	Arg	Ala	Lys	Ala	Lys	Val	Ala	Phe	Arg	Leu	Asp	Phe
		900						905					910		
Glu	Phe	Ser	Lys	Ser	Val	Phe	Leu	His	His	Leu	Gln	Ile	His	Leu	Gly
	915						920					925			
Ala	Gly	Ser	Asp	Ser	His	Glu	Gln	Asp	Ser	Thr	Ala	Asp	Asp	Asn	Thr
	930					935					940				
Ala	Leu	Leu	Arg	Phe	His	Leu	Lys	Tyr	Glu	Ala	Asp	Val	Leu	Phe	Thr
945					950					955					960
Arg	Ser	Ser	Ser	Leu	Ser	His	Phe	Glu	Val	Lys	Ala	Asn	Ser	Ser	Leu
			965						970					975	
Glu	Ser	Tyr	Asp	Gly	Ile	Gly	Pro	Pro	Phe	Asn	Cys	Val	Phe	Lys	Val
			980					985					990		
Gln	Asn	Leu	Gly	Phe	Phe	Pro	Ile	His	Gly	Val	Met	Met	Lys	Ile	Thr
	995						1000					1005			
Val	Pro	Ile	Ala	Thr	Arg	Gly	Gly	Asn	Arg	Leu	Leu	Met	Leu	Arg	Asp
	1010					1015						1020			
Phe	Phe	Thr	Asp	Gln	Gly	Asn	Thr	Ser	Cys	Asn	Ile	Trp	Gly	Asn	Ser
1025					1030					1035					1040
Thr	Glu	Tyr	Arg	Ser	Thr	Pro	Thr	Glu	Glu	Asp	Leu	Ser	His	Ala	Pro
				1045					1050					1055	
Gln	Arg	Asn	His	Ser	Asn	Ser	Asp	Val	Val	Ser	Ile	Ile	Cys	Asn	Leu





<400> 27  
 Asp Asn Ser Phe Leu Ala Cys Ser Pro Leu Trp Ser His Glu Cys Gly  
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 Ser Ser Tyr Tyr Thr Thr Gly Met Cys Ser Arg Val Asn Ser Asn Phe  
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 Arg Phe Ser Lys Thr Val Ala Pro Ala Leu Gln  
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 <211> 26  
 <212> PRT  
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<400> 28  
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 Gly Ala Val Gly Ala Tyr Asp Trp Asn Gly  
 20 25

<210> 29  
 <211> 35  
 <212> PRT  
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<400> 29  
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 Lys Val Ile  
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<400> 31  
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<400> 32  
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<400> 33  
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Leu Leu Val Leu Ala Leu Trp  
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<212> PRT  
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<400> 34  
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Gly Pro Ile Pro Lys Glu Leu Lys  
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<210> 35  
<211> 56  
<212> PRT  
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<400> 35  
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Gly Asp Lys Ser Gly Tyr Pro Asp Leu Leu Val Gly Ala Pro Arg  
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<210> 36  
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Asn Lys Trp Leu Val Val Gly Ala Pro Leu Glu Thr Asn Gly Tyr Gln  
20 25 30  
Lys Thr Gly Asp Val Tyr Lys Cys Pro Val Ile His Gly Asn Cys Thr  
35 40 45  
Lys Leu Asn Leu Gly Arg  
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<210> 37  
 <211> 52  
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<400> 37  
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 Gln Gly Arg Val Tyr Val Ala Gly Ala Pro Arg Phe Asn His Thr Gly  
 20 25 30  
 Lys Val Ile Leu Phe Thr Met His Asn Asn Arg Ser Leu Thr Ile His  
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<210> 38  
 <211> 57  
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<400> 38  
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 Asp Gly Val Thr Asp Val Leu Leu Val Gly Ala Pro Met Tyr Phe Asn  
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 Glu Gly Arg Glu Arg Gly Lys Val Tyr Val Tyr Glu Leu Arg Gln Asn  
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 Arg Phe Val Tyr Asn Gly Thr Leu Lys  
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 Gln Asp Ser Tyr Asn Asp Val Val Val Gly Ala Pro Leu Glu Asp Asn  
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 His Ala Gly Ala Ile Tyr Ile Phe His Gly Phe Arg Gly Ser Ile Leu  
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 Lys Thr Pro Lys Gln Arg Ile Thr  
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 Ile Leu Trp Ser Arg Pro Val Val Gln Ile Asn Ala Ser Leu His Phe  
 35 40 45

Glu Pro Ser Lys Ile Asn Ile  
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